REMARKS

In accordance with the foregoing, claims 1, 3, 6, 7, 10, and 13 have been amended, and claim 14 has been canceled without prejudice or disclaimer. Claims 1, 3, 6, 7, 10, and 13 are pending, with claims 1, 6, and 13 being independent. No new matter is presented in this Supplemental Amendment.

Applicants' Statement of Substance of Interview

The applicants would like to express their appreciation for the courtesy of the personal interview conducted on October 2, 2008, between the Examiner, Matthew J. Song, and the undersigned attorney, Randall S. Svihla. At the conclusion of the interview, the Examiner gave the attorney a copy of an Interview Summary stating as follows:

> Claim(s) discussed: 1, 3, 6, 7, 10, 13, and 14.
>
> Identification of prior art discussed: Jung (US 6,825,493) and Yang (2002/0197759).
>
> Substance of Interview: Discussed Jung's variation of width and Examiner attempted to clarify the [sic] Jung does not explicitly teach the claimed grain width, and that the feature would be inherent. The examiner [sic] merely relies on the Figure of Jung as evidence and the feature would be inherent because of the overlap size taught by Jung of 1.3 micrometers and the suggestion that grain sizes are dependant on the size of the overlapped region. Also discussed the limitation in claim 6 regarding the size of the non-transmission and transmission regions. The Examiner maintained that masking slits are result effective and would consider the applicant's arguments regarding that size relationship of the masking and non-masking regions being a result effective variable. Applicant proposed amendments to the claims which the Examiner agreed to consider, assuming that the amendment would be filed within the next month.

The Examiner subsequently mailed a copy of the Interview Summary on October 16, 2008. The applicants' statement of the substance of the interview required by the Interview Summary and MPEP 713.04 is as follows.

Width of the Overlapping Region

The attorney pointed out that independent claims 1, 6, and 13 as they were considered in the Office Action of June 12, 2008, contain the phrase "width of the overlapping region." The attorney asked the Examiner to clarify what he considers to the width of the overlapping region in FIGS. 6B and 7B of Jung (U.S. Patent No. 6,825,493). The Examiner stated that in FIG. 6B, the mask with the light transmitting portions having a width of 2 μm is shifted by 0.7 μm, so the width of the overlapping region, i.e., the width of the portion of the previously crystallized silicon that is exposed by one of the light transmitting portions, is 2 μm - 0.7 μm = 1.3 μm. The Examiner stated that in FIG. 7B, the mask is shifted by 1.7 μm, so the width of the overlapping region is 0.3 μm.

Grain Width

The attorney pointed out that claims 1, 6, and 13 as they were considered in the Office Action of June 12, 2008, recite that "the average width of the polycrystalline silicon grains is varied between approximately 0.2 μm and 0.6 μm, and is decreased when the width of the overlapping region on which the laser beam is overlappingly irradiated is decreased."

The attorney pointed out that in the Office Action of June 12, 2008, the Examiner states that column 10, lines 1-15, of Jung discloses a grain width of 12 μm, and that column 10, lines 1-65, of Jung discloses a grain width of 1.7 μm. The attorney pointed out that the grain width of 12 μm is shown as "P" in FIG. 6D of Jung, and is produced by the overlap of 1.3 μm shown in FIG. 6B of Jung, and that the grain width of 1.7 μm is shown as "U" in FIG. 7D of Jung, and is produced by the overlap of 0.3 μm shown in FIG. 7B of Jung.

The attorney pointed out that it is his understanding that the Examiner considers Jung to disclose that the grain width decreases from 12 μm to 1.7 μm as the overlap decreases from 1.3 μm to 0.3 μm. However, the attorney stated that he does not understand why the Examiner considers this to provide the feature "the average width of the polycrystalline silicon grains is varied between approximately 0.2 μm and 0.6 μm, and is decreased when the width of the overlapping region on which the laser beam is overlappingly irradiated is decreased" recited in claims 1, 6, and 13 because the variation of 12 μm to 1.7 μm disclosed by Jung is outside the range of approximately 0.2 μm to 0.6 μm recited in claims 1, 6, and 13. Also, the attorney

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pointed out that what Jung calls the grain <u>width</u> as shown in FIGS. 6D and 7D of Jung is what the applicants call the grain <u>length</u> as shown in FIG. 1B of the present application, and that the applicants' grain width as shown in FIG. 1B of the present application is <u>perpendicular</u> to Jung's grain width as shown in FIGS. 6D and 7D of Jung.

The Examiner stated that the direction of the grain width is not recited in claims 1, 6, and 13, and that in any event, he is relying on the grain widths of 12 µm and 1.7 µm shown in FIGS. 6D and 7D as a general teaching that grain width decreases as overlap decreases to provide the feature "the average width of the polycrystalline silicon grains . . . is decreased when the width of the overlapping region on which the laser beam is overlappingly irradiated is decreased" recited in claims 1, 6, and 13.

The Examiner stated that he considers FIG. 3C of Jung to show the feature "the average width of the polycrystalline silicon grains is varied between approximately 0.2 µm and 0.6 µm" recited in claims 1, 6, and 13 because FIG. 3C shows an overlap of 1.3 µm, which is within the range of 0.5 µm and 2 µm recited in claims 1, 6, and 13 and it appears that the grain width in the Y direction in FIG. 3C, which is the same direction as the grain width shown in FIG. 1B of the present application, is less than the 0.7 µm dimension shown in FIG. 3C.

The attorney pointed out that nothing <u>whatsoever</u> in Jung discusses the <u>actual</u> width of the grains in the Y direction as shown in FIG. 3C of Jung, and that nothing <u>whatsoever</u> in Jung indicates that FIG. 3C is intended to represent what the grains <u>actually look like</u>. The attorney stated that it is entirely possible that whoever prepared FIG. 3C simply drew in some grains <u>without any regard to their actual width</u>. The attorney showed the Examiner a copy of MPEP 2125, which states as follows in pertinent part on MPEP page 2100-59:

> **PROPORTIONS OF FEATURES IN A DRAWING ARE NOT EVIDENCE OF ACTUAL PROPORTIONS WHEN DRAWINGS ARE NOT TO SCALE**
>
> When the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. See *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000) (The disclosure gave no indication that the drawings were drawn to scale. "[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show

particular sizes if the specification is completely silent on the issue.").

The Examiner acknowledged that in light of this, he cannot properly rely on FIG. 3C of Jung to show the feature "the average width of the polycrystalline silicon grains is varied between approximately 0.2 μm and 0.6 μm" recited in claims 1, 6, and 13. However, the Examiner stated that he is actually relying on an inherency argument. The Examiner explained that since Jung discloses an overlap of 1.3 μm that is within the range of 0.5 μm and 2 μm recited in claims 1, 6, and 13, and since Jung's grains are produced by the same process as the applicants' grains, i.e., by sequential lateral solidification (SLS), then Jung's grains inherently have the same width as the applicants' grains, such that Jung inherently discloses the feature "the average width of the polycrystalline silicon grains is varied between approximately 0.2 μm and 0.6 μm" recited in claims 1, 6, and 13.

However, the attorney pointed out that Jung does not disclose the feature "wherein a width of the overlapping region . . . is varied from no less than 0.5 μm to 2 μm" recited in claim 1 as it was considered in the Office Action of June 12, 2008, or the feature "wherein a width of the overlapping region . . . is varied between 0.5 μm and 2 μm" recited in claim 6 as it was considered in the Office Action of June 12, 2008, or the feature "an overlapping region . . . that has a width varied from no less than 0.5 μm to 2 μm" as recited in claim 13 as it was considered in the Office Action of June 12, 2008, because Jung discloses only one overlap within the range of 0.5 μm to 2 μm recited in claims 1, 6, and 13, i.e., the overlap of 1.3 μm shown, for example, in FIGS. 3C and 6B of Jung. The Examiner stated that he is not sure the applicants actually vary the overlap while performing the sequential lateral solidification. The attorney pointed out that although the applicants may not actually vary the overlap while performing the sequential lateral solidification, the fact remains that one aspect of the applicants' invention is the applicants' discovery that any overlap greater than 0.5 μm produces the unexpected results that electric field mobility and threshold voltage are nearly constant for overlaps greater than 0.5 μm even though grain width decreases as overlap decreases as shown, for example, in FIGS. 3-5 of the present application, and that Jung does not disclose the overlap range that produces these unexpected results.

Declaration Under Rule 132

A Declaration Under Rule 132 by Hye-Hyang Park, one of the inventors of the present application was filed on March 26, 2008. The Declaration points out that Jung does <u>not</u> disclose the features "a width of the overlapping region during crystallization corresponds to the distance, and is varied from no less than 0.5 µm to 2 µm" and "the average width of the polycrystalline silicon grains is varied between approximately 0.2 µm and 0.6 µm, and is decreased when the width of the overlapping region on which the laser beam is overlappingly irradiated is decreased" recited in claim 1 as it was considered in the Office Action of June 12, 2008, and the similar features recited in claim 13 as it was considered in the Office Action of June 12, 2008. The Declaration also discusses the unexpected results produced by the applicants' invention as discussed above.

However, in the Office Action of June 12, 2008, the Examiner states that the Declaration is insufficient to overcome the rejections of claims 1, 3, 6-8, 10, 13, and 14 based on Jung because the Declaration fails to show unexpected results because the Declaration fails to compare the closest prior art, Jung, with the claimed invention, and only alleges that the invention produces unexpected results.

The attorney stated that he does <u>not</u> understand the Examiner's position because the Declaration clearly compares Jung with the claimed invention and explains why the claimed invention produces unexpected results.

The Examiner stated that the Declaration refers to the grain widths of P=12 µm and U=1.7 µm shown in FIGS. 6D and 7D of Jung, but that Jung's width is not the same as the applicants' width because it is perpendicular to the applicant's width, and that therefore the Declaration does not show that Jung discloses a grain width outside the grain width range of 0.2 µm to 0.6 µm recited in claims 1, 6, and 13. However, the attorney pointed out that paragraph 3 bridging pages 5 and 6 of the Declaration clearly states that Jung does <u>not</u> disclose the feature "the average width of the polycrystalline silicon grains is varied between approximately 0.2 µm and 0.6 µm, and is decreased when the width of the overlapping region on which the laser beam is overlappingly irradiated is decreased" recited in claims 1 and 13.

The Examiner also stated that he considers the Declaration to be insufficient to overcome the rejection because, in his opinion, the Declaration should have shown why the overlap of 1.3 µm disclosed by Jung, which is in the overlap range of 0.5 µm to 2 µm recited in

claims 1, 6, and 13, does not produce a grain width in the grain width range of 0.2 μm to 0.6 μm recited in claims 1, 6, and 13.

The Examiner also stated that he considers the Declaration to be insufficient to show unexpected results because it only shows unexpected results at the 0.5 μm end of the overlap range of 0.5 μm to 2 μm recited in claims 1, 6, and 13, and does not show unexpected results at the 2 μm end of this range.

The attorney explained that one aspect of the applicants' invention is the discovery that any overlap greater than 0.5 μm <u>produces the unexpected results that electric field mobility and threshold voltage are nearly constant for overlaps greater than 0.5 μm even though grain width decreases as overlap decreases</u> as shown, for example, in FIGS. 3-5 of the present application, as reflected, for example, in original claim 1 of the present application, which recites "overlappingly irradiating the laser beam onto a region wider than 0.5 μm when crystallizaing [*sic*] the amorphous silicon thin film." The Examiner stated that the upper limit of 2 μm of the overlap range of 0.5 μm to 2 μm recited in claims 1, 6, and 13 appears to him to be arbitrary, unless the applicants can show that unexpected results occur at the 2 μm end of the range. The attorney explained that the upper limit of 2 μm was recited in claims 1, 6, and 13 because that is the maximum overlap that is specifically disclosed, but that the unexpected results that occur at the 0.5 μm end of the range do not occur at the 2 μm end of the range, and therefore the applicants cannot show that these unexpected results occur at the 2 μm end of the range. The attorney asked the Examiner what the Examiner would do if the applicants were to delete the upper limit of 2 μm from claims 1, 6, and 13 by amending claims 1, 6, and 13 to recite an overlap of greater than 0.5 μm to be consistent with original claim 1. The Examiner stated that he would then have to reject the claims as being too broad. The attorney stated that the Examiner's position that the applicants must show unexpected results at the 2 μm end of the range and his refusal to permit the applicants to delete the upper limit of 2 μm from the claims places the applicants in an impossible position.

Difference in Width Between Laser Transmission Region and Laser Non-Transmission Region

The attorney pointed out that claim 6 as it was considered in the Office Action of June 12, 2008, recites that "the laser transmission region is wider than the laser non-transmission region by more than 1 μm." The attorney explained that it is his understanding that the Examiner

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considers Yang (U.S. Patent Application Publication No. 20002/0197759) to teach this feature of claim 6 because the Examiner considers the size of a slit to be a result-effective variable, apparently based at least on the statement in paragraph [0010] of Yang that "[t]he width of each slit 'A' effectively defines the grain size of the crystallized silicon produced by a first laser irradiation," and is therefore of the opinion that it would have been obvious to optimize the size of the openings in Jung's masks to provide the feature "the laser transmission region is wider than the laser non-transmission region by more than 1 μm."

The attorney directed the Examiner's attention to MPEP 2144.05(II)(B), which states as follows on MPEP page 2100-152:

B.   Only Result-Effective Variables Can Be Optimized

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective [*sic*] variable.).

The attorney pointed out that since claim 6 recites that "the laser transmission region <u>is</u> <u>wider than</u> the laser non-transmission region <u>by more than 1 μm</u>," MPEP 2144.05(II)(B) requires the Examiner to show that the <u>difference</u> between the width of laser transmission region and the width of a laser non-transmission region <u>is recognized in the art as a result-effective variable</u> before the Examiner can allege that it would have been obvious to optimize this difference. The attorney pointed out that the Examiner has <u>not</u> made such a showing, and that the attorney does <u>not</u> see where Yang shows this. Accordingly, the attorney stated that Yang does <u>not</u> teach the feature "the laser transmission region <u>is wider than</u> the laser non-transmission region <u>by more</u> <u>than 1 μm</u>" recited in claim 6. <u>The Examiner stated that he would consider this argument, but</u> <u>needed more time to do so.</u>

The Examiner also asked the attorney about the significance of the laser transmission region being wider than the laser non-transmission region by more than 1 μm. The attorney explained that this enables the overlap to be more than 0.5 μm.

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The attorney pointed out that claim 13 as it was considered by the Examiner in the Office Action of June 12, 2008, recites that "a width of the laser transmission region is larger than a width of the laser non-transmission region by at least 1 μm." In light of this, the attorney stated that he does not understand why the Examiner has rejected claim 13 and claim 14 depending therefrom under 35 USC 102(b) as being anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Jung in the Office Action of June 12, 2008, since the Examiner states that "Jung does not each the laser transmission region is wider than the laser non-transmission region by more than 1 μm" on page 5 of the Office Action of June 12, 2008, in explaining the rejection of claim 6 under 35 USC 103(a) as being unpatentable over Jung in view of Yang. The Examiner stated that the inclusion of claims 13 and 14 in the rejection based only on Jung must have been a typographical error.

Overlap in Thin-Film Transistor Region of Substrate

The attorney pointed out that the overlap of 1.3 μm shown in FIG. 6B of Jung is used in crystallizing amorphous silicon in a region in which driving circuits including CMOS devices are to be formed (see driving region 104 in FIG. 4 of Jung), and that the overlap of 0.3 μm shown in FIG. 7B is used in crystallizing silicon in a display region in which thin-film transistors (TFTs) are to be formed (see display region 102 in FIG. 4 of Jung).

In contrast, the attorney pointed out that according to an aspect of the invention, an overlap in a range of greater than 0.5 μm to not greater 2 μm is used in crystallizing amorphous silicon in a region in which thin-film transistors (TFTs) are to be formed. See, for example, paragraphs [0026] and [0029]-[0031] of Jung. Accordingly, the attorney pointed out that if the claims were amended to recite that the crystallization is performed in a thin-film transistor region of a substrate, the Examiner could not reject the claims based on Jung because the only overlap disclosed in Jung for use in crystallizing amorphous silicon in a region in which thin-film transistors (TFT) are to be formed is the 0.3 μm overlap shown in FIG. 7B, which is outside the range of greater than 0.5 μm to not greater 2 μm. The Examiner agreed that it appeared that he could not reject such amended claims based on Jung.

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Proposed Claim Amendments Discussed at Interview

The attorney briefly proposed amendments to claims 1 and 6 during the interview. The attorney pointed out that he proposed to amend independent claims 1 and 6 to recite "forming an amorphous silicon layer on a thin-film transistor region of a substrate." The attorney also pointed out that he proposed to amend claims 1 and 6 to recite that the overlap width "is always greater than 0.5 µm and always not greater than 2 µm," and to make it clear that the overlap width is measured perpendicularly to a boundary between amorphous silicon and previously crystallized silicon as shown in FIG. 1B of the present application, and that the grain width of 0.2 µm to 0.6 µm is measured perpendicularly to the overlap width as shown in FIG. 1B of the present application to clearly distinguish over the grain widths of 12 µm and 2 µm that are measured in parallel with the overlap widths of 1.3 µm and 0.3 µm as shown in FIGS. 6B, 6D, 7B, and 7D of Jung. The Examiner stated that these he would consider a supplemental amendment amending claims 1 and 6 to include these features if the supplemental amendment is filed within one month.

Claim Amendments in Supplemental Amendment

Independent claims 1 and 6 have been amended in this Supplemental Amendment to include the features discussed during the interview conducted on October 2, 2008, and independent claim 13 has also been amended to include these features.

Specifically, claims 1 and 6 have been amended to recite "forming an amorphous silicon layer on a thin-film transistor region of a substrate," and independent claim 13 has been amended to recite "irradiating a portion of an amorphous silicon layer on a thin-film transistor region of a substrate."

Also, claims 1, 6, and 13 have been amended to recite that "a width of the overlapped portion of the first polycrystalline silicon region measured perpendicularly to a boundary between the exposed portion of the amorphous silicon layer and the overlapped portion of the first polycrystalline silicon region is always greater than 0.5 µm and always not greater than 2 µm."

Also, claims 1, 6, and 13 have been amended to recite that "an average width of polycrystalline silicon grains of the second polycrystalline silicon region measured perpendicularly to the width of the overlapped portion of the first polycrystalline silicon region is

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greater than approximately 0.2 µm and not greater than approximately 0.6 µm, and decreases as the width of the overlapped portion of the first polycrystalline silicon region decreases."

In addition, claim 13 has been amended to recite that "the laser transmission region is wider than the laser non-transmission region by more than 1 µm," the same feature that was and still is recited in claim 6. Claim 13 previously recited that "a width of the laser transmission region is larger than a width of the laser non-transmission region by at least 1 µm," which says the same thing in different words.

Declaration Under Rule 132 Is Sufficient to Establish Unexpected Results

During the interview conducted on October 2, 2008, the Examiner stated that he considers the Declaration Under Rule 132 filed on March 26. 2008, to be insufficient to show unexpected results because it only shows unexpected results at the 0.5 µm end of the overlap range of 0.5 µm to 2 µm recited in claims 1, 6, and 13, and does not show unexpected results at the 2 µm end of this range. However, it is submitted that there is no support whatsoever in any statute, rule, procedure, guideline, or decision for the Examiner's position that a Declaration Under Rule 132 must show unexpected results at both ends of claimed range, and it is respectfully requested that the Examiner identify such support in the next Office Action should he maintain his position.

Furthermore, the Examiner's attention is directed to MPEP 716.02(d)(II), which states as follows on MPEP page 700-296:

> II.   DEMONSTRATING CRITICALITY OF A CLAIMED
> RANGE
>> To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. *In re Hill*, 284 F.2d 955, 128 USPQ 197 (CCPA 1960).

Here, the Declaration Under Rule 132 filed on March 26, 2008, discusses results obtained at an overlap of 0.5 µm, which is outside the range of "always greater than 0.5 µm and always not greater than 2 µm" now recited in claims 1, 6, and 13, and at overlaps of 1 µm, 1.5 µm, and 2 µm, which are inside the range of "always greater than 0.5 µm and always not greater than 2 µm" now recited in claims 1, 6, and 13.

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The Declaration shows that the TFT field-effect mobility is <u>relatively high and relatively constant</u> at the overlaps of 1 μm, 1.5 μm, and 2 μm <u>inside</u> the claimed range, rather than <u>decreasing with decreasing overlap</u> as would normally be expected, and is <u>relatively low</u> at the overlap of 0.5 μm <u>outside</u> the claimed range.

Also, the Declaration shows that the threshold voltage is <u>relatively constant</u> at the overlaps of 1 μm, 1.5 μm, and 2 μm <u>inside</u> the claimed range, which is <u>contrary</u> to what would normally be expected.

Accordingly, it is submitted that the Declaration is in fact <u>sufficient</u> to establish that the range of "always greater than 0.5 μm and always not greater than 2 μm" now recited in claims 1, 6, and 13 provides <u>unexpected results</u>.

Claim Rejections Under 35 USC 102/103

Claims 1, 3, 13, and 14 have been rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over Jung (U.S. Patent No. 6,825,493). The rejection of claim 14 is <u>moot</u> since claim 14 has been <u>canceled</u> in this Supplemental Amendment. The rejection of claims 1, 3, and 13 is respectfully traversed for at least the following reasons; the reasons discussed during the interview of October 2, 2008, as set forth above; and the reasons discussed in the Amendment of September 8, 2008.

It is submitted that Jung does <u>not</u> disclose or suggest the combination of features "forming an amorphous silicon layer on <u>a thin-film transistor region</u> of a substrate" and "a width of the overlapped portion of the first polycrystalline silicon region <u>measured perpendicularly to a boundary</u> between the exposed portion of the amorphous silicon layer and the overlapped portion of the first polycrystalline silicon region <u>is always greater than 0.5 μm and always not greater than 2 μm</u>" now recited in claim 1 <u>or the similar combination of features now recited in claim 13</u> because Jung discloses that the width of the overlapped portion can be either <u>1.3 μm</u> as shown in FIGS. 3C and 6B of Jung, or <u>0.3 μm</u> as shown in FIG. 7B of Jung. Thus, Jung permits the width of the overlapped portion to be <u>outside</u> the range of "always greater than 0.5 μm and always not greater than 2 μm" now recited in claims 1 and 13. Also, the <u>only</u> width of the overlapped portion that Jung discloses for use in a <u>thin-film transistor region</u> is the width of <u>0.3</u>

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μm shown in FIG. 7B of Jung, which is <u>outside</u> the range of "always greater than 0.5 μm and always not greater than 2 μm" now recited in claims 1 and 13.

Furthermore, it is submitted that Jung does <u>not</u> disclose or suggest the combination of features "a width of the overlapped portion of the first polycrystalline silicon region <u>measured perpendicularly to a boundary</u> between the exposed portion of the amorphous silicon layer and the overlapped portion of the first polycrystalline silicon region <u>is always greater than 0.5 μm and always not greater than 2 μm</u>" and "an average width of polycrystalline silicon grains of the second polycrystalline silicon region <u>measured perpendicularly to the width of the overlapped portion</u> of the first polycrystalline silicon region <u>is greater than approximately 0.2 μm and not greater than approximately 0.6 μm</u>, and decreases as the width of the overlapped portion of the first polycrystalline silicon region decreases" now recited in claims 1 and 13 because Jung does <u>not</u> disclose or suggest the overlap range of "always greater than 0.5 μm and always not greater than 2 μm" now recited in claims 1 and 13 for at least the reasons discussed above, and it is <u>not</u> seen where Jung discloses <u>any</u> grain widths measured <u>perpendicularly</u> to the widths of 1.3 μm and 0.3 μm of the overlaps shown in FIGS. 3C, 6B, and 7B of Jung.

Furthermore, it is submitted that the overlap range of "always greater than 0.5 μm and always not greater than 2 μm" now recited in claims 1 and 13 would <u>not</u> have been obvious over Jung because this range produces <u>unexpected results</u> as discussed in the Declaration Under Rule 132 filed on March 26, 2008, as discussed above.

Furthermore, it is submitted that Jung does <u>not</u> disclose or suggest the feature "a width of the laser transmission region is larger than a width of the laser non-transmission region by at least 1 μm" recited in claim 13 as it was considered in the Office Action of June 12, 2008, or the feature "the laser transmission region is wider than the laser non-transmission region by more than 1 μm" now recited in claim 13 as evidenced by the Examiner's statement on page 5 of the Office Action of June 12, 2008, that "Jung does not each the laser transmission region is wider than the laser non-transmission region by more than 1 μm."

For at least the foregoing reasons; the reasons discussed during the interview of October 2, 2008, as set forth above; and the reasons discussed in the Amendment of September 8, 2008, it is respectfully requested that the rejection of claims 1, 3, and 13 (i.e., claims 1 and 13 discussed above and claim 3 depending from claim 1) under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over Jung be <u>withdrawn</u>.

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Claim Rejections Under 35 USC 103

Claims 6-8 and 10 have been rejected under 35 USC 103(a) as being unpatentable over Jung in view of Yang (U.S. Patent Application Publication No. 2002/0197759). The rejection of claim 8 is moot since claim 8 was canceled in the Amendment of September 8, 2008. The rejection of claims 6, 7, and 10 is respectfully traversed for at least the following reasons; the reasons discussed during the interview of October 2, 2008, as set forth above; and the reasons discussed in the Amendment of September 8, 2008.

It is submitted that Jung and Yang do not disclose or suggest the following combination of features now recited in independent claim 13 for at least the same reasons discussed above that Jung does not disclose or suggest the same combination of features now recited in claim 1:

> forming an amorphous silicon layer on a thin-film transistor
> region of a substrate;
>
> . . . .
>
> wherein a width of the overlapped portion of the first
> polycrystalline silicon region measured perpendicularly to a
> boundary between the exposed portion of the amorphous silicon
> layer and the overlapped portion of the first polycrystalline silicon
> region is always greater 0.5 μm and always not greater than 2 μm;
> and
>
> wherein an average width of polycrystalline silicon grains of
> the second polycrystalline silicon region measured perpendicularly
> to the width of the overlapped portion of the first polycrystalline
> silicon region is greater than approximately 0.2 μm and not greater
> than approximately 0.6 μm, and decreases as the width of the
> overlapped portion of the first polycrystalline silicon region
> decreases.

Furthermore, it is submitted that Jung and Yang do not disclose or suggest the feature "the laser transmission region is wider than the laser non-transmission region by more than 1 μm" recited in claim 6.

The Examiner considers Yang (U.S. Patent Application Publication No. 20002/0197759) to teach this feature of claim 6 because the Examiner considers the size of a slit to be a result-effective variable, apparently based at least on the statement in paragraph [0010] of Yang that "[t]he width of each slit 'A' effectively defines the grain size of the crystallized silicon produced by

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a first laser irradiation," and is therefore of the opinion that it would have been obvious to optimize the size of the openings in Jung's masks to provide the feature "the laser transmission region is wider than the laser non-transmission region by more than 1 μm."

However, the Examiner's attention is directed to MPEP 2144.05(II)(B), which states as follows on MPEP page 2100-152:

> **B.   Only Result-Effective Variables Can Be Optimized**
>
> A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective [*sic*] variable.).

Since claim 6 recites that "the laser transmission region is wider than the laser non-transmission region by more than 1 μm," it is submitted that MPEP 2144.05(II)(B) requires the Examiner to show that the difference between the width of laser transmission region and the width of a laser non-transmission region is recognized in the art as a result-effective variable before the Examiner can allege that it would have been obvious to optimize this difference. It is submitted that the Examiner has not made such a showing, and it is not seen where Yang shows this. Accordingly, it is submitted that Yang does not teach the feature "the laser transmission region is wider than the laser non-transmission region by more than 1 μm" recited in claim 6 as alleged by the Examiner.

For at least the foregoing reasons; the reasons discussed during the interview of October 2, 2008, as set forth above; and the reasons discussed in the Amendment of September 8, 2008, it is respectfully requested that the rejection of claims 6, 7, and 10 (i.e., claim 6 discussed above and claims 7 and 10 depending therefrom) under 35 USC 103(a) as being unpatentable over Jung in view of Yang be withdrawn.

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Conclusion

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.
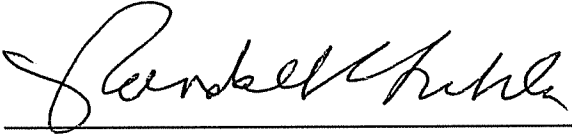
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with the filing of this paper, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN, MCEWEN & BUI, LLP

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